

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-42

Name: Twin Lakes

County: Sanborn

Legal Description: T106N-R62W-Sec.30-31; T106-R63-Sec. 24-25

Location from nearest town: 6 miles south and 3 miles west of Woonsocket, SD

Dates of present survey: July 6-7, 2009

Dates of last survey: July 7-8, 2008

Primary Game and Forage Species	Other Species
Walleye	Black Bullhead
Black Crappie	Common Carp

PHYSICAL DATA

Surface Area: 252 acres

Maximum depth: 12.5 feet

Volume: 1,512 acre-feet

Contour map available: Yes

OHWM elevation: None set

Outlet elevation: None set

Lake elevation observed during the survey: Full

Beneficial use classifications: (5) warmwater semipermanent fish life propagation, (7) immersion recreation, (8) limited-contact recreation and (9) wildlife propagation and stock watering.

Watershed: 1,118 acres

Mean depth: 6 feet

Shoreline length: 13.1 miles

Date mapped: 1990

Date set: NA

Date set: NA

Ownership of Lake and Adjacent Lakeshore Properties

Twin Lakes was so named because its two basins are nearly identical in size and joined by a narrow channel. The lake is not listed as meandered public water in the State of South Dakota Listing of Meandered Lakes; however, the fishery is managed by the South Dakota Department of Game, Fish and Parks (GFP). GFP also owns and manages a 50-acre Lake Access Area on the west side of the lake. The remainder of the shoreline is privately owned.

Fishing Access

The Twin Lakes Recreation Area, located on the west shore, contains a double lane boat ramp, dock, picnic area, primitive campground, public toilet and shore fishing access.

Field Observations of Water Quality and Aquatic Vegetation:

Water clarity during the survey was fair with a Secchi depth of 1.1 m (42 in). A few small beds of sago pondweed (*Potamogeton pectinatus*) were observed in shallow water while common cattail (*Typha spp.*) and bulrush (*Scirpus spp.*) were abundant around

much of the shoreline. The crew noticed a hydrogen sulfide smell (rotten eggs) coming from the water.

BIOLOGICAL DATA

Methods:

Twin Lakes was sampled on July 6-7, 2009 with three overnight gill net sets and five overnight trap net sets. The trap nets are constructed with 19-mm-bar-mesh ($\frac{3}{4}$ in) netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads. The gill nets are 45.7 m long x 1.8 m deep (150 ft long x 6 ft deep) with one 7.6 m (25 ft) panel each of 13, 19, 25, 32, 38 and 51-mm-bar-mesh ($\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 in) monofilament netting. Sampling locations are displayed in Figure 3.

Winterkill:

Twin Lakes experiences occasional winterkills due to its shallow basin and hypereutrophic condition.

The last severe winterkill occurred in 2007-2008 with only a few black bullheads and small common carp surviving. The lake was restocked with adult black crappies and walleye fry in 2008 (Table 9). However, either the stocking failed or the lake experienced another fish kill since few fish were caught or observed by anglers. This netting survey was conducted in response to these concerns by lake residents and anglers.

Results and Discussion:

Gill Net Catch

Black bullhead was the only species sampled (Table 1).

Table 1. Total catch from three overnight gill net sets at Twin Lakes, Sanborn County, July 6-7, 2009.

Species	Number	Percent	CPUE ¹	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	19	100	6.3	<u>+1.9</u>	21.6	37	0	107

* 5 years (2000, 2002, 2004, 2006, 2008)

Trap Net Catch

Black bullhead (82.3%) dominated the trap net sample in this year's survey (Table 2). Common carp, hybrid sunfish, black crappies, and bluegills were also sampled.

¹ See Appendix A for definitions of CPUE, PSD, RSD-P, and mean Wr.

Table 2. Total catch from five overnight trap net sets at Twin Lakes, Sanborn County, July 6-7, 2009.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	363	82.3	72.6	<u>+44.3</u>	632.8	13	0	96
Common Carp	43	9.8	8.6	<u>+2.6</u>	1.0	42	0	105
Hybrid Sunfish	31	7.0	6.2	<u>+5.1</u>	0.3	--	--	--
Black Crappie	2	0.5	0.4	<u>+0.3</u>	16.1	--	--	--
Bluegill	2	0.5	0.4	<u>+0.3</u>	3.1	--	--	--

* 5 years (2000, 2002, 2004, 2006, 2008)

Walleye

Management objective: Establish and maintain a walleye fishery following winterkills and whenever water levels are sufficient to sustain fish life for a reasonable length of time.

The 2007-2008 winterkill eliminated the walleye population in Twin Lakes. Walleye fry were stocked in 2008 (Table 9) to reestablish the population but the stocked fish apparently did not survive. More walleyes were stocked in fall of 2009.

Table 3. Walleye gill-net CPUE, PSD, RSD-P, and mean Wr for Twin Lakes, Sanborn County, 2001-2009.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Mean*
CPUE		5.0		4.3		1.7		0.0	0.0	2.7
PSD		0		0		--		--	--	0
RSD-P		0		0		--		--	--	0
Mean Wr		92		79		--		--	--	86

* 5 years (2000, 2002, 2004, 2006, 2008)

Black Crappie

Management objective: Establish and maintain a black crappie fishery following winterkills and whenever water levels are sufficient to sustain fish life for a reasonable length of time.

Only two black crappies were sampled during the survey. More stocking is scheduled if fish become available.

Table 4. Black crappie trap-net CPUE, PSD, RSD-P, and mean Wr for Twin Lakes, Sanborn County, 2001-2009.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Mean*
CPUE		8.1		7.0		36.7		8.8	0.4	16.1
PSD		43		80		21		23	--	34
RSD-P		10		49		2		0	--	12
Mean Wr		121		95		94		98	--	103

* 5 years (2000, 2002, 2004, 2006, 2008)

Black Bullhead

Management objective: Maintain a black bullhead population with a trap-net CPUE of no more than 100.

Bullhead abundance has dropped back within the management objective (Table 5). Bullhead length averaged only 180 mm (7.1in) which is too small to be desirable to anglers.

Table 5. Black bullhead trap-net CPUE, PSD, RSD-P, and mean Wr for Twin Lakes, Sanborn County, 2001-2009.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Mean*
CPUE		628.3		2.7		1.1		186.8	72.6	632.8
PSD		13		58		--		7	13	20
RSD-P		0		0		--		0	0	0
Mean Wr		--		88		--		107	96	98

* 5 years (2000, 2002, 2004, 2006, 2008)

All Species

CPUE for common carp and hybrid sunfish is above average, all other species are below average in abundance (Table 6).

Table 6. Gill-net (GN) and trap-net (TN) CPUE for all fish species sampled in Twin Lakes, Sanborn County, 2002-2009.

Species	2002	2003	2004	2005	2006	2007	2008	2009
SNG (TN)	--		0.2		0.3		--	--
COC (GN)	0.3		0.7		2.0		--	--
COC (TN)	0.9		0.5		0.8		2.8	8.6
WHS (GN)	0.7		0.3		0.3		--	--
WHS (TN)	1.5		1.0		0.4		--	--
BIB (GN)	20.7		7.7		6.7		--	--
BIB (TN)	1.9		0.8		0.4		--	--
BLB (GN)	35.7		0.3		1.3		1.5	6.3
BLB (TN)	628.3		2.7		1.1		186.8	72.6
NOP (GN)	1.0		1.0		--		--	--
NOP (TN)	1.7		1.1		0.3		--	--
WHB (TN)	0.1		--		--		--	--
SMB (TN)	1.0		0.8		--		--	--
OSF (TN)	--		--		0.1		--	--
GSF (TN)	--		--		1.2		--	--
HYB (TN)	0.5		0.3		0.4		0.2	6.2
BLG (TN)	0.5		3.2		10.1		--	0.4
WHC (TN)	0.2		0.1		0.2		--	--
BLC (GN)	--		--		1.3		--	--
BLC (TN)	8.1		7.0		36.7		8.8	0.4
YEP (GN)	0.3		0.7		0.7		--	--
YEP (TN)	0.1		--		0.2		--	--
WAE (GN)	5.0		4.3		1.7		--	--
WAE (TN)	2.8		1.2		4.3		--	--

SNG (Shortnose Gar), COC (Common Carp), WHS (White Sucker), BIB (Bigmouth Buffalo), BLB (Black Bullhead), NOP (Northern Pike), WHB (White Bass), GSF (Green Sunfish), OSF (Orange-spotted Sunfish), HYB (Hybrid Sunfish), BLG (Bluegill), SMB (Smallmouth Bass), WHC (White Crappie), BLC (Black Crappie), YEP (Yellow Perch), WAE (Walleye)

MANAGEMENT RECOMMENDATIONS

1. Stock northern pike, yellow perch, walleye and black crappie as needed and following winterkills to maintain the fishery.
2. Continue to monitor the Twin Lakes fishery by conducting biennial netting surveys.

Table 7. Stocking record for Twin Lakes, Sanborn County, 1996-2009.

Year	Number	Species	Size
1996	38,200	Walleye	Sml. Fingerling
	2,620	Yellow Perch	Adult
1997	28,800	Walleye	Fingerling
	2,720	Yellow Perch	Adult
1998	26,200	Walleye	Fingerling
1999	13,585	Black Crappie	Juvenile
	26,200	Walleye	Fingerling
2000	11,895	Yellow Perch	Juvenile
	30,400	Walleye	Fingerling
	2,546	Yellow Perch	Adult
2001	26,640	Walleye	Fingerling
2003	262,000	Walleye	Fry
2005	26,400	Walleye	Fingerling
2006	27,000	Walleye	Fingerling
	2,824	Black Crappie	Adult
	3,399	Black Crappie	Adult
2008	300,000	Walleye	Fry
	253	Walleye	Adult
	849	Yellow Perch	Adult
	1,806	Yellow Perch	Juvenile

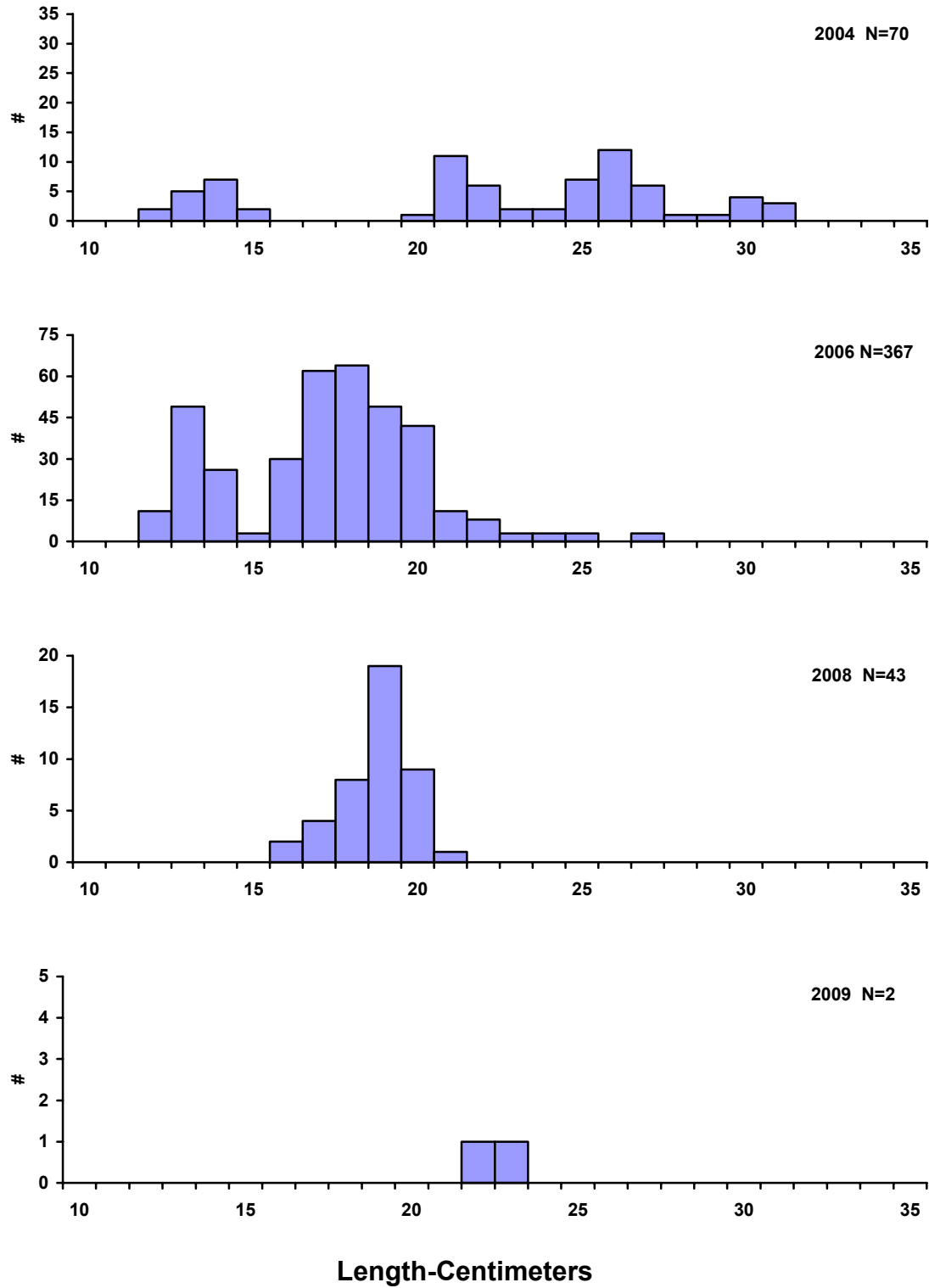


Figure 1. Length frequency histograms for black crappie sampled with trap nets in Twin Lakes, Sanborn County, 2004, 2006, 2008, 2009.

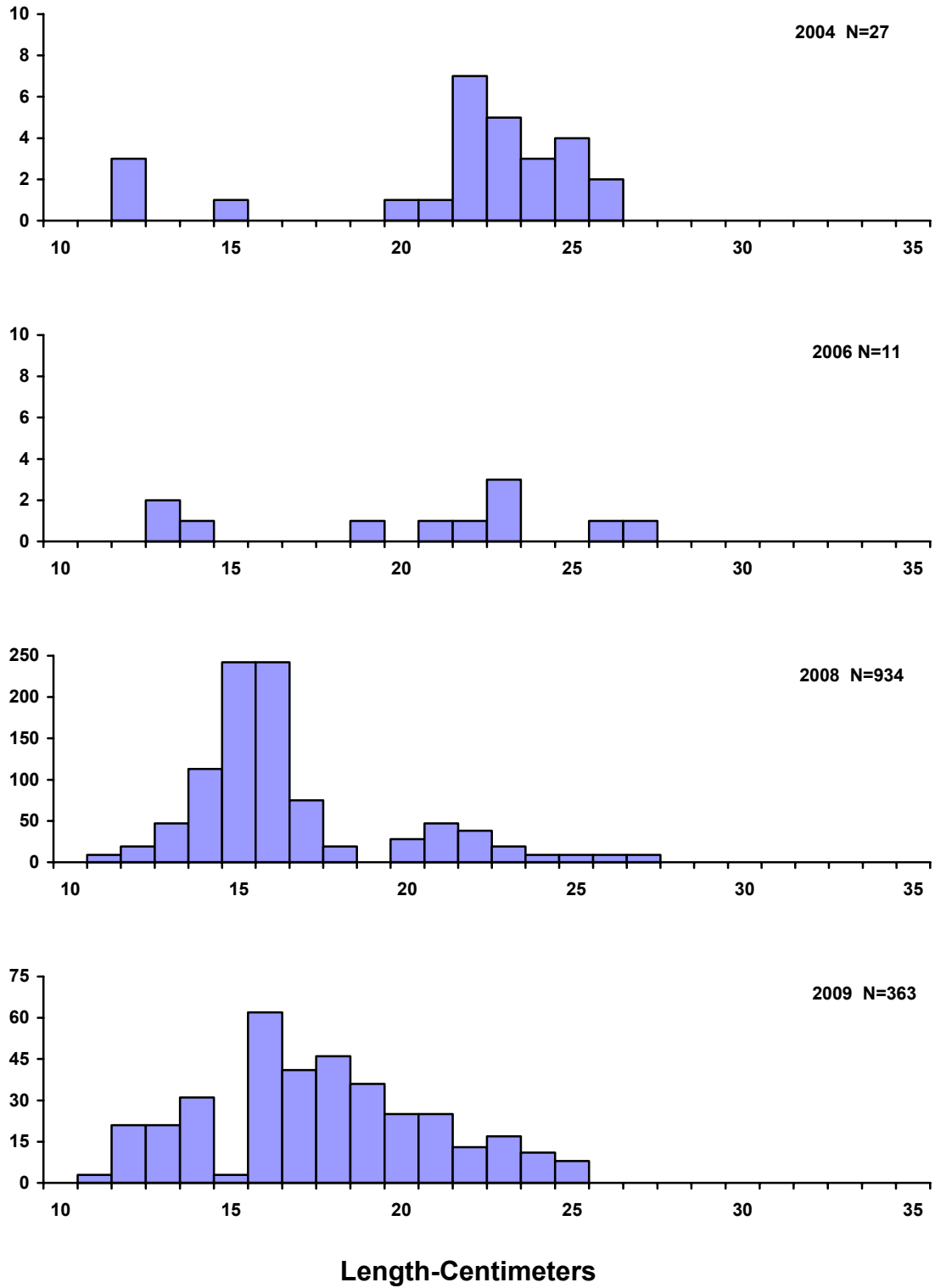
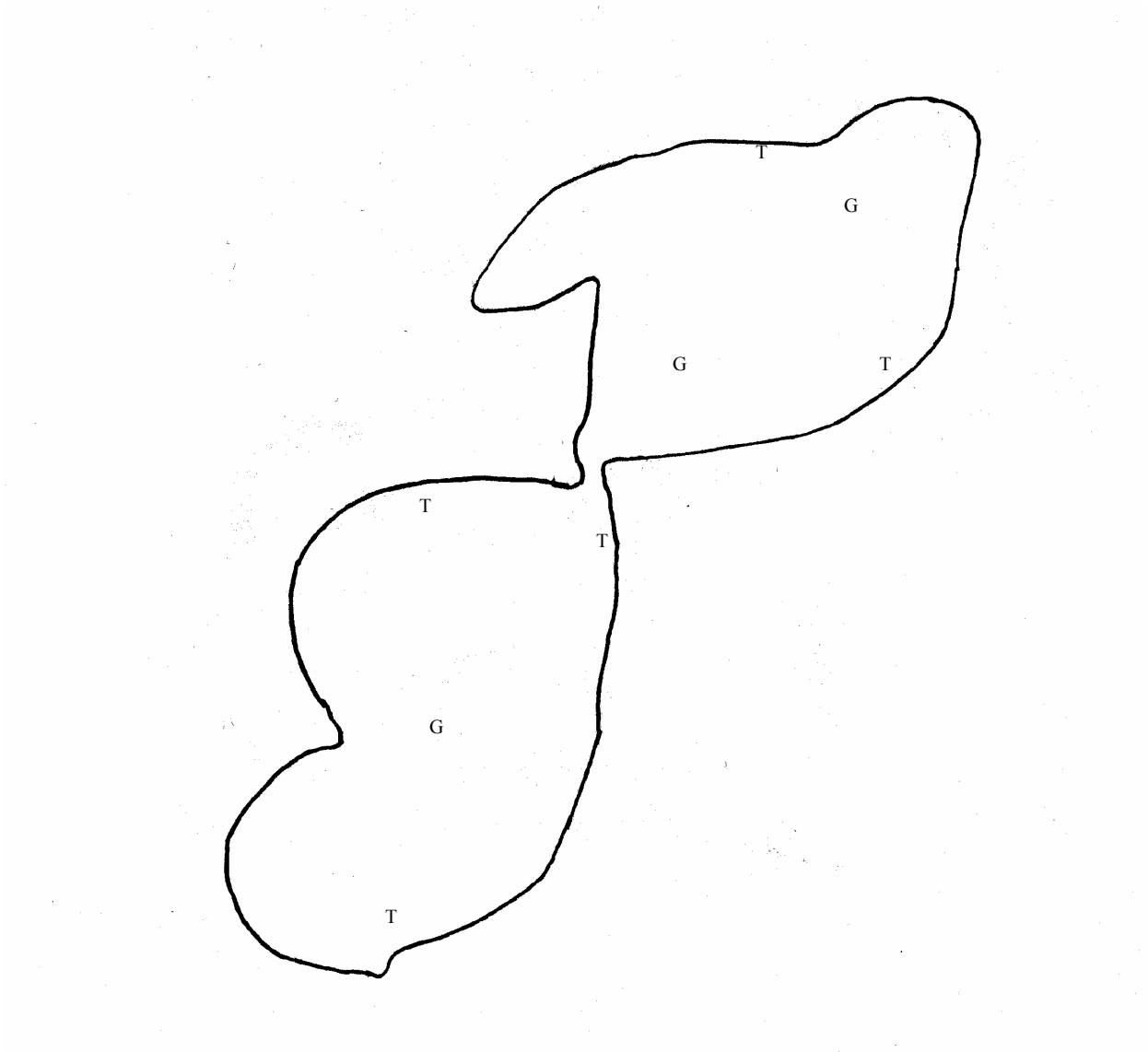


Figure 2. Length frequency histograms for black bullheads sampled with trap nets in Twin Lakes, Sanborn County, 2004, 2006, 2008, 2009.



Legend
Gill Nets: G
Trap Nets: T

Figure 3. Sampling locations on Twin Lakes, Sanborn County, 2009.

Appendix A. A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

Catch Per Unit Effort (CPUE) is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill-net nights of effort, catch per hour of electrofishing, etc.

Proportional Stock Density (PSD) is calculated by the following formula:

$$\text{PSD} = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

Relative Stock Density (RSD-P) is calculated by the following formula:

$$\text{RSD-P} = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters.

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25	38	51	63	76
Sauger	20	30	38	51	63
Yellow perch	13	20	25	30	38
Black crappie	13	20	25	30	38
White crappie	13	20	25	30	38
Bluegill	8	15	20	25	30
Largemouth bass	20	30	38	51	63
Smallmouth bass	18	28	35	43	51
Northern pike	35	53	71	86	112
Channel catfish	28	41	61	71	91
Black bullhead	15	23	30	38	46
Common carp	28	41	53	66	84
Bigmouth buffalo	28	41	53	66	84
Smallmouth buffalo	28	41	53	66	84

For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

Relative weight (Wr) is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.